ORDER NO. SD83022408C2

Service Manual

QUARTZ Synthesizer FM/AM Stereo Tuner

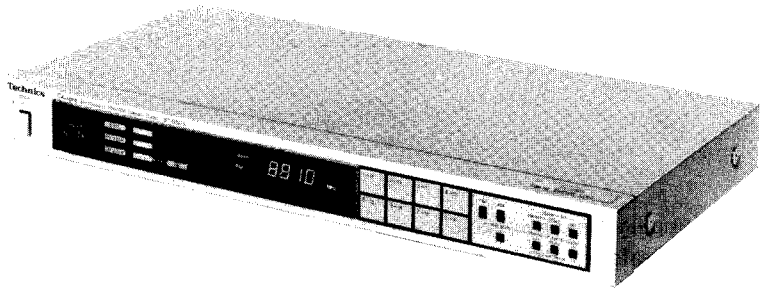
ST-S505

[EGA]

ST-S505(K)

[EGA]

* [EGA] is available in F.R. Germany.



* The colors of this model included silver and black.
* The black type model is provided with (K) in the Service Manual.

TECHNISCHE DATEN

Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.

(DIN 45 500)

■ UKW-TUNERTEIL

Wellenbereich	87,50 ~ 108,00 MHz
	87,525 ~ 108,00 MHz (+25 kHz shift)
Eingangsempfindlichkeit	
S/R 30 dB	1,3 μV (75 Ω)
S/R 26 dB	1,2 μV (75 Ω)
S/R 20 dB	0,9 μV (75 Ω)
Nutzempfindlichkeit nach IHF	1,5 μV (nach IHF '58)
Stereoumschaltschwelle bei 46 dB nach IHF	28 μV/75 Ω
Gesamtklirrfaktor	
Mono	0,04%
Stereo	0,05%
Geräuschabstand	
Mono	70 dB (78 dB nach IHF)
Stereo	65 dB (70 dB nach IHF)
Frequenzgang	5 Hz ~ 18 kHz (+0,2 dB ~ −0,5 dB)
Trennschärfe bei Störsender	
normal ±400 kHz	55 dB
super narrow ±200 kHz	25 dB
Einfangverhältnis	1,0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	75 dB
ZF-Dämpfung bei 98 MHz	100 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	100 dB
MW-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	60 dB
Trägerrest	
19 kHz	−65 dB (−70 dB nach IHF)
38 kHz	−48 dB (−50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,0 dB
Begrenzereinsatz	0,75 μV
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschluß	75 Ω (unsymmetrisch)

■ MW-TUNERTEIL

Wellenbereiche	
	522 kHz~1611 kHz (9 kHz)
	530 kHz~1620 kHz (10 kHz)
Eingangsempfindlichkeit (S/R 20 dB)	20 μV, 290 μV/m
Trennschärfe (±9 kHz)	55 dB
Spiegelfrequenz-Dämpfung bei 999 kHz	40 dB
ZF-Dämpfung bei 999 kHz	60 dB

■ ALLGEMEINE DATEN

Ausgangsspannung	1,0 V
Leistungsaufnahme	9W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 220V
Abmessungen (B×H×T)	430 × 53 × 245 mm
Gewicht	2,4 kg

Bemerkung:
Der Gesamtklirrfaktor wurde mit einem digitalen Rauschspektrometer (Anlage H.P. 3045) gemessen.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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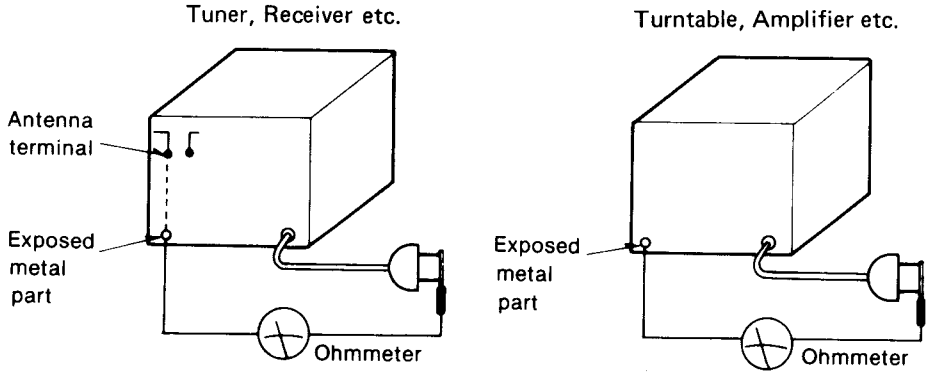
■ SAFETY PRECAUTION

1. Before servicing (such as replacement of components), unplug the power supply cord to prevent an electric shock.
2. Use only manufacturer's recommended components for safety. Check condition of power cord and replace if wear or damage is evident.
3. After servicing, be sure to restore the following to the condition in which they were originally installed.
   (1) the lead dress and
   (2) insulation barriers, insulation papers, shields and the like.
4. Before returning a serviced apparatus to a customer, make the following insulation resistance test to prevent a customer from being exposed to a shock hazard.

- **Insulation resistance test (See figure below.)**

1. Unplug the power supply cord and connect a jumper wire between the two prongs on the plug.
2. Turn on the power switch of the apparatus.
3. Measure the resistance value (with an ohmmeter) between the jumpered AC plug and each exposed metalic cabinet part on the apparatus, such as screwheads, antenna, control shafts, handle brackets, etc.
   The reading should be as shown in figure below. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the apparatus should be repaired and rechecked before it is returned to a customer.



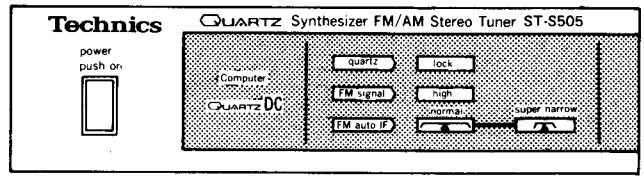
where, R: resistance value

■ FEATURES

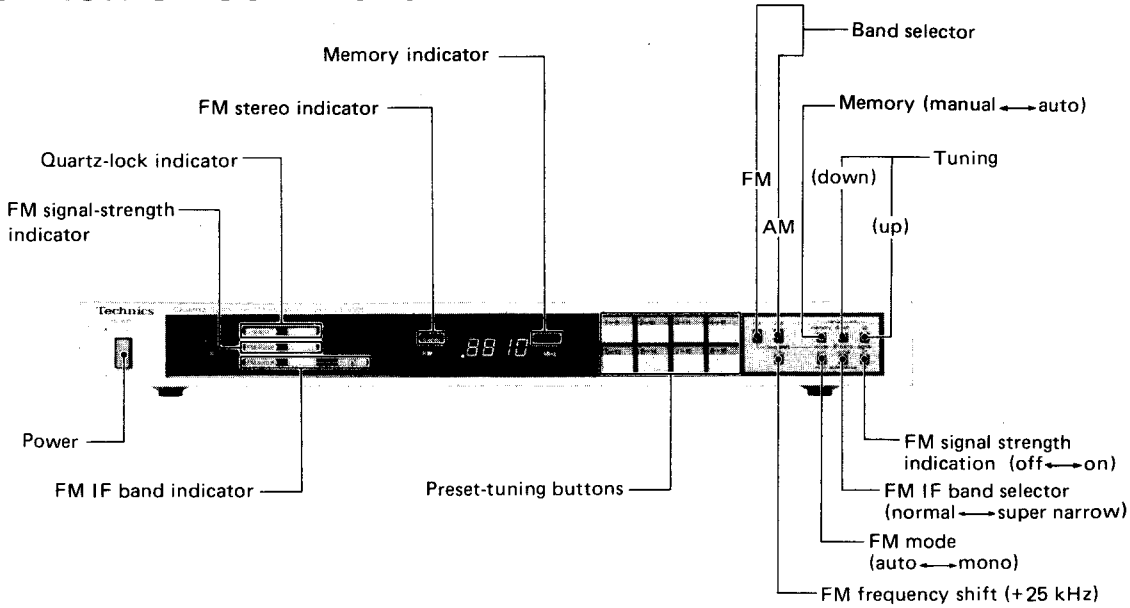
- Computer quartz DC (auto pilot canceller, jitter distortion eliminator, sub-carrier eliminator) tuner featuring wave-form transmission.
- Automatic IF selector circuit built in.
- Auto scan/auto memory/FM/AM 8-station preset tuning.
- FM signal input strength is indicated every 2 dB.
- "High" monitor that gives the indication when the input signal is sufficient.
- Tuning control terminal for audio programmable timer (SH-4060) attached.
- FM wing antenna automatic control terminal attached.

Introducing the DC configuration that has been used in the world of power amplifier into the field of tuner, this unit has realized the technique of more perfect reproduction "To transmit the atmosphere as it is" or as for wave-form transmission in a physical way of expression, the purpose has been achieved by making the best use of quartz synthe in a wide range from DC to extra-low frequency.

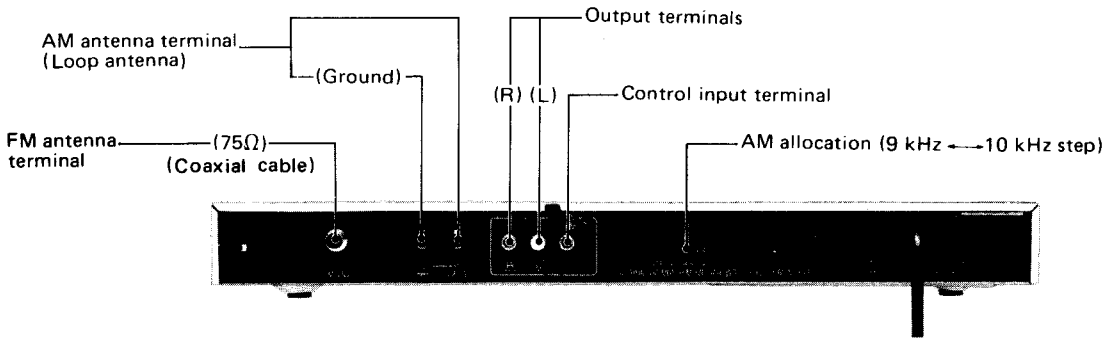
- Computer quartz DC tuner featuring wave-form transmission "To transmit the atmosphere of the concert hall as it is". Titler distortion (generated as sub-carrier signal is vibrated by large amplitude or high frequency audio signal) eliminator circuit; auto level adjuster in 19 kHz pilot signal cancel circuit, minimizing carrier leakage to improve the performance of the linear circuits; and the incomparably flat and wide range frequency response (5 Hz ~ 18 kHz, +0.2 dB, −0.5 dB) is one of the excellecharacteristics.
- Auto IF circuit utilizing computer technology to improve the signal receiving performance —— auto IF selector circuit to cope with the operations of normal IF circuit featuring audio characteristic and of super-narrow IF circuit featuring elimination of interference.
  The IF circuit in this unit is intended to ensure both selectivity and audio characteristic. The normal IF circuit is the result of general study of group delay characteristic. And the super-narrow IF circuit having 25 dB effective selectivity in 200 kHz detuning is able to cope with stronger interference signal. The circuit selection is made by the computer in accordance with the interference signal and input signal levels.
- Multi-function one-touch selection quartz synthe, auto tuning/auto scan memory, CH number indication.
  Step-by-step manual tuning; high-speed scanning starts with the key depressed, and the mode is shifted to auto tuning when the key is released near the desired frequency. Also, auto scanning starts with the memory key depressed, and the receivable station is stored into the memory when the key is released.
  When the preset station key is depressed, the CH number appears in the FL display tube for 1.7 sec.
- Audio quartz synthe in which the reference frequency is set at 25 kHz outside the audible frequency band.
- FM prescaler based upon the swallow-in counter system of 1/16 and 1/17 frequency division which hardly causes spurious interference.
- FM front end of single/double tuning circuit improved in RF IM characteristic, employing the newly developed 4-pole MOS FET.
- FM signal strength digital indication —— the original technology of Technics. (Accurate indication up to 54 dB by 2 dB each.)
- It is batteryless, empolying a liquid electrolyte double layer capacitor of 3.3F (farad). Memory backup of over 1 week in case of power failure.
- AM loop antenna that can be set in the optimum position. Highly selective and sensitive AM section to cope with 9 kHz.
- Auto tuning FM antenna terminal to which FM wing antenna of Technics. original can be directly connected.
- Input terminal that allows free selection of stations in combination with weekly programmable timer SH-4060, (It can be controlled with serial signal.)



■ LOCATION OF CONTROLS



***The FM signal indicator (high) lights up when the signal level is about 40 dB.**



■ HOW TO OPERATE

• Listening to radio broadcasts

Important!

If this antenna is not installed, AM broadcasts will not be received.

1 Turn the amplifier on, and prepare it for listening to radio broadcasts.

2 Power: "on" (■→▬)

3-1 Station selection by using the manual tuning buttons:

① Press either "FM" or "AM".
② Press the left button to change the frequency downward, and press the right button to change the frequency upward.

- **Auto tuning**

Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.

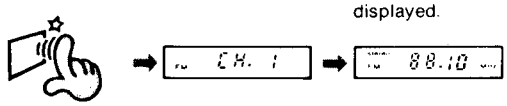
- **Manual tuning**

Press the button momentarily (the frequency will change each time the button is pressed) and tune to the desired station.

3-2 Station selection by using preset tuning buttons:

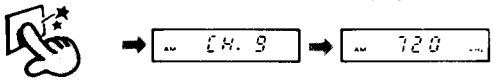
- **To select the front channels (CH 1~8):**

Press momentarily.	Channel number is displayed.	Frequency stored in the memory is displayed.



- **To select the back channels (CH 9~16):**

Press slightly longer	Release the button when the channel number is displayed.	Frequency stored in the memory is displayed.



4 Station selection:
To listen to a broadcasting station whose frequency is located on a 0.025 MHz step, such as 98.025 MHz or 98.075 MHz, first select the station using the preset tuning button or the tuning button, and then press this button.

5 If the broadcast signal is weak, or if there is a large amount of interference in a stereo broadcast, set to the mono position.
Note that the FM stereo indicator will not illuminate in this position.

• Automatic memory presetting

Beginning at the frequency indicated by the digital display, the FM broadcasting stations and AM broadcasting stations will be automatically preset to "channels" 1 through 8 for FM and 9 through 16 for AM, respectively. Note that in mountainous or remote areas, broadcasting stations which have weak broadcasting signals cannot be automatically preset into the memory.

3 • To preset FM broadcasting stations: Set to 87.50 MHz.
• To preset AM broadcasting stations: Set to 522 kHz (or 530 kHz).
Tuning

① Press the button and hold slightly (frequency will change continuously).

② Release it at 87.50 MHz for FM or 522 kHz (or 530 kHz) for AM, and then press the button again momentarily (frequency change will stop).

③ Press the button momentarily (frequency will change each time the button is pressed), and tune to one of the above frequencies.

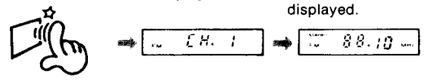
2 Press the "FM" or "AM" button.

1 Power: "on" (■→▬)

5 Confirm the names (call signs, etc.) of the broadcasting stations which are preset to each channel, and enter them on the file sheet.

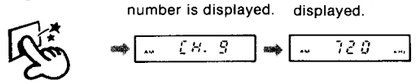
To check the front channels (CH1~8):

Press momentarily. → Channel number is displayed. → Frequency stored in the memory is displayed.



To check the back channels (CH 9~16):

Press slightly longer. → Release the button when the channel number is displayed. → Frequency stored in the memory is displayed.



4 Press. When the frequency indication begins to change, release.

(The frequency will change upward, and the automatic presetting will begin with the broadcasting station of the lowest frequency and will continue in order.)

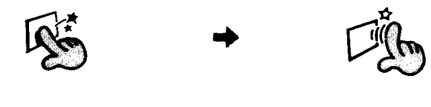
• Manual memory presetting

Stations can be freely preset to any desired channel.

3 Press the appropriate tuning button to tune to the desired broadcast.

• Auto tuning
Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.

• Manual tuning
Press the button momentarily (the frequency will change each time the button is pressed) and tune to the desired station.



2 • Press the "FM" or "AM" button.

1 Power: "on" (■→▬)

Memory indicator

5 While the memory indicator is illuminated, press the button of the desired channel.

• To preset channels 1 through 8:

Press the button momentarily, and then release.

• To preset channels 9 through 16:

Press the button slightly longer, and then release.

When the button is pressed, the memory indicator illumination will stop, and the presetting is complete.

Note:
1. If the memory indication illumination stops before you press the button, once again repeat step (4) and then step (5).
2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

4 Press momentarily, and then release.
(The memory indicator will illuminate for approximately 4 seconds.)

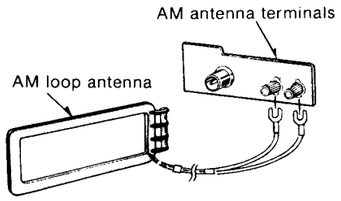
Note:
If the button is pressed continuously, the frequency will begin to change, and the memory will be preset automatically.
In order to stop the automatic selection, press either the "up" button or the "down" button.

6 Enter the name (call sign, etc.) of the preset broadcasting station on the file sheet (page 14).
This completes the procedures for presetting radio broadcast frequencies. The other preset-tuning buttons can be preset in the same way by following steps (2) through (5).

• How to use the AM loop antenna

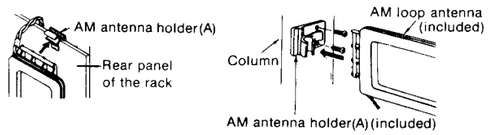
This unit includes a highly sensitive loop antenna for AM broadcast reception. If this antenna is not installed, AM broadcast will not be received. No outdoor antenna is necessary unless this unit is used in an area where signals are especially weak. (Connect the AM loop antenna even when an outdoor antenna is used.)

1. Connect the AM loop antenna to the AM antenna terminals located on the rear panel of the unit.

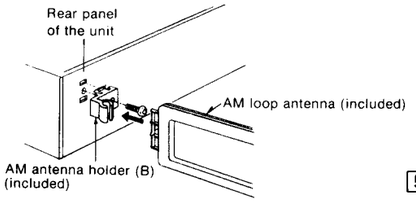


2. Find the height and direction of the antenna where reception is best and then fix it vertically to the wall, rack, etc.

1) When attaching the antenna to a wall, cloumn or rack.

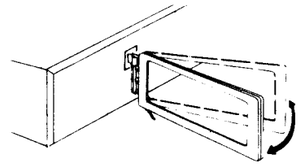


2) When attaching the antenna to the unit.
This type of installation may cause impaired reception or result in signal noise. If possible, attach the antenna to the rack, a wall, or a column.



Pay attention to the following points when attaching the antenna.
1) Do not attach it horizontally (to do so would impair reception).
2) Do not attach it close to metal surfaces (to do so would result in noise).
3) Do not attach it close to power cords, speaker wires, etc. (to do so would result in noise).
4) Do not attach it close to a tape deck (when the tape deck is being used, chirping or beeping sounds may be received).

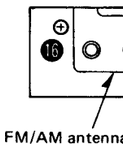
3. Move the antenna toward the right or left to find the point of best reception.



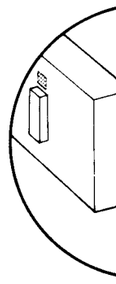
■ DISA

• **How to r**
1. Remove t cabinet.
2. Move the Fig. 1.
3. Remove th Fig. 2) of in Fig. 2 a rear panel.
4. Pressing th panel in th front pane arrow Ⓒ (**(Raise the**

• **How to r**
1. Remove th **(Refer to**
2. Remove th bracket of it in the di
3. The claws panel are e Disengage remove the



FM/AM antenna



• Manual memory presetting

Stations can be freely preset to any desired channel.

❸ Press the appropriate tuning button to tune to the desired broadcast.

- **Auto tuning**
  Press the button. When the frequency indication begins to change, release the button (a broadcasting station will be selected automatically). Repeat this operation until the desired station is found.
- **Manual tuning**
  Press the button momentarily (the frequency will change each time the button is pressed) and tune to the desired station.

❷ • Press the "FM" or "AM" button.

❶ Power: "on" (■→▲)

Memory indicator

❺ While the memory indicator is illuminated, press the button of the desired channel.

- **To preset channels 1 through 8:**

Press the button momentarily, and then release.

- **To preset channels 9 through 16:**

Press the button slightly longer, and then release.

When the button is pressed, the memory indicator illumination will stop, and the presetting is complete.

Note:

1. If the memory indication illumination stops before you press the button, once again repeat step (4) and then step (5).
2. If a new broadcasting station is preset into a channel, the broadcasting station which was previously entered in that channel will be automatically erased.

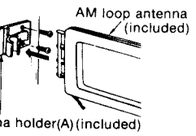
❹ Press momentarily, and then release.
(The memory indicator will illuminate for approximately 4 seconds.)

Note:
If the button is pressed continuously, the frequency will begin to change, and the memory will be preset automatically.
In order to stop the automatic selection, press either the "up" button or the "down" button.

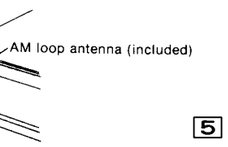
❻ Enter the name (call sign, etc.) of the preset broadcasting station on the file sheet (page 14).
This completes the procedures for presetting radio broadcast frequencies. The other preset-tuning buttons can be preset in the same way by following steps (2) through (5).

na where reception is best and

olumn or rack.

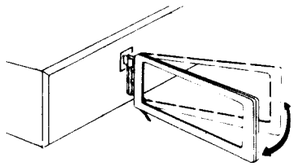


aired reception or result in signal
the rack, a wall, or a column.



Pay attention to the following points when attaching the antenna.
1) Do not attach it horizontally (to do so would impair reception).
2) Do not attach it close to metal surfaces (to do so would result in noise).
3) Do not attach it close to power cords, speaker wires, etc. (to do so would result in noise).
4) Do not attach it close to a tape deck (when the tape deck is being used, chirping or beeping sounds may be received).

3. Move the antenna toward the right or left to find the point of best reception.



■ DISASSEMBLY INSTRUCTIONS

When repairing the FM front-end pack, replace it with the adjusted pack for repair.

• How to remove the printed circuit board

1. Remove the 4 setscrews (❶ ~ ❹ in Fig. 1) of the cabinet.
2. Move the cabinet in the direction of the arrow Ⓐ in Fig. 1.
3. Remove the 5 setscrews (❺ ~ ❼ in Fig. 1 and ❽, ❾ in Fig. 2) of the front panel and the 8 setscrews (❿ ~ ⓯) in Fig. 2 and ⓰, ⓱ in Fig. 3) of the bottom board or rear panel.
4. Pressing the 2 claws on the right and left sides of front panel in the direction of arrow Ⓑ (Fig. 4), remove the front panel along with the P.C.B. in the direction of arrow Ⓒ (Fig. 4).
   (Raise the printed circuit board when repairing.)

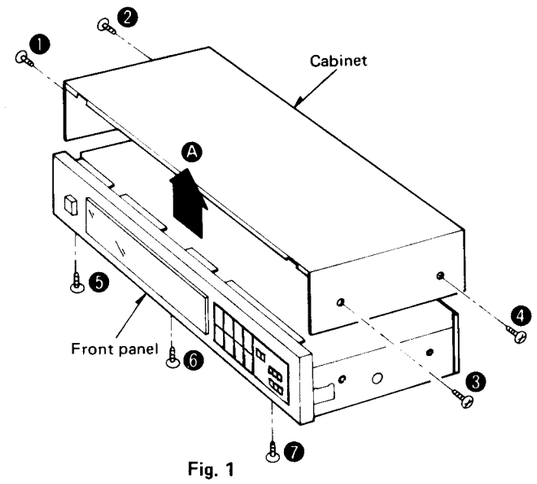


Fig. 1

• How to remove the front sub-panel

1. Remove the printed circuit board.
   (Refer to "How to remove the printed circuit board".)
2. Remove the set screw (⓲ in Fig. 4) which fastens the bracket of FL. Next, remove the bracket by pushing it in the direction of arrow Ⓓ with a screwdriver.
3. The claws projected (at 8 portions) from the front sub-panel are engaged with the front panel.
   Disengage the claws from by screwdriver or the like to remove the front sub-panel. (See Fig. 5)

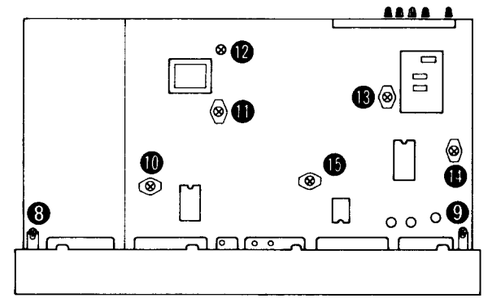


Fig. 2

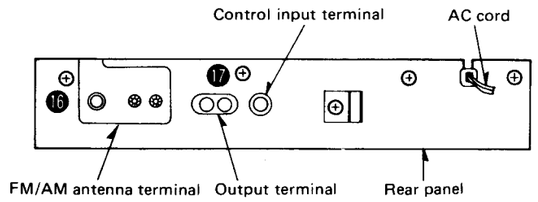


Fig. 3

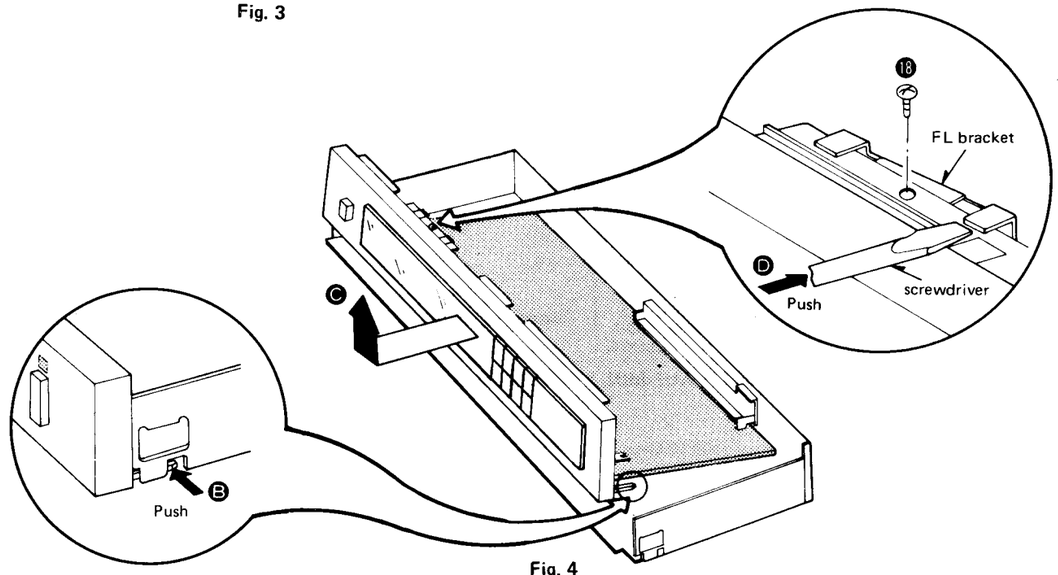


Fig. 4

ST-S505 ST-S505

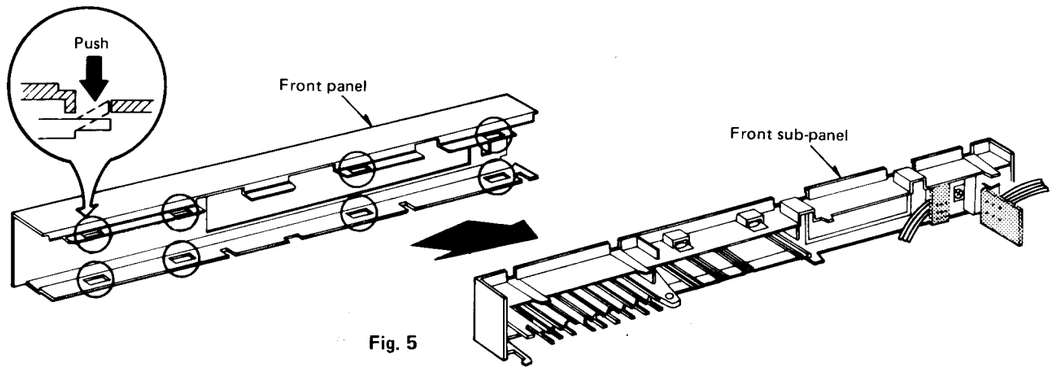


Fig. 5

■ MESSUNGEN UND JUSTIERUNGEN

Anmerkung: AM-OSC-Spule (L203) und Filter (L303) sind bereits justiert und benötigen daher keine Justierung.

AM (MW)-EINSTELLUNG

*** Stellungen und zu benutzende Geräte**
1. Elektronische Voltmeter für Wechsel- und Gleichstrom (VTVM).
2. AM (MW)-Meßsender (AM-SG).
3. Bereichsschalter. . . . . .AM
4. AM (MW) Wellenverteilungs-Wahlschalter auf position "9 kHz" stellen.
5. Netzspannung auf ihren Sollwerthalten.
6. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute ablesung.
7. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.

Nr.	AM (MW)-MESSENDER ANSCHLUSS	AM (MW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	AM (MW)-ZF-ABGLEICH					
1	AM-MO über 200 pF Kondensator an den AM-Antennenanschluß anschließen, wie in Abb. 6 gezeigt. (Starker Eingang.)	450 kHz (400 Hz Modulat., 30%)	Kein Empfang	Wechselstrom voltmeter oder Oszillograph über den Ausgang "OUTPUT" schließen.	T201 (1. IFT) T202 (2. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adustieren, daß der Ausgang den maximalen Wert erreicht.
	AM (MW)-HF-ABGLEICH					
2	AM-MO über 200 pF Kondensator an den AM-Antennenanschluß anschließen, wie in Abb. 6 gezeigt. (Starker Eingang.)	612 kHz (400 Hz Modulat., 30%)	612 kHz	Oszilloskop oder Wechselstrom-Voltmeter an Ausgangsklemme "OUTPUT" schließen.	L202 (Ant. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L202 mit einem Schraubendreher justieren.
3		1503 kHz (400 Hz Modulat., 30%)	1503 kHz		CT201 (Ant. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (2) und (3) wiederholen, bis die Frequenz genau mit der Skalenanzeige übereinstimmt.

FM (UKW)-EINSTELLUNG

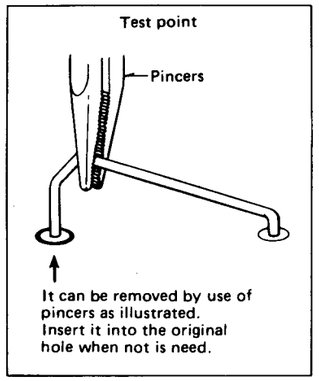
*** Stellungen und zu benutzenden Geräte**
1. UKW-Meßsender (FM-SG)
2. Klirrfaktor-Meßbrücke.
3. Elektronische Voltmeter für Wechsel-und Gleichstrom (VTVM).
4. Signalfrequenzmesser (meßar für 19 kHz und 108 MHz).
5. Bereichsschalter. . . . . FM
6. Den UKW-Betriebsartenschalter auf die "mono"-position stellen.
7. Die anderen Einstellungen sind gleich wie beider MW-Justierung.

*** Vorbereitung des UKW-Meßoszillators (UKW-MO)**
Die Normal-Eingangsleistung dieses Gerätes beträgt 60 dB (1 mV), 400 Hz, 100% Modulation. (Wegen der Dämpfung bei Verwendung von Koaxialkabeln, muß die MO-Ausgangsleistung 6 dB oder mehr betragen: d.h. wenn die Eingangsleistung 60 dB beträgt, muß der MO-Ausgang 66 dB betragen.

Nr.	FM (UKW)-MESSENDER ANSCHLUSS	FM (UKW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
4	Verbinden UKW-MO zu FM Antennende, wie in Abb. 7 gezeigt. (60 dB in den Antenneneingang leiten.)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	Ein Gleichstrom voltmeter zwishen TP101 und TP102 über eine Drosselspule verbinden.	T101 (Diskriminator FT)	Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0 mV im 300 mV Bereich beträgt.
5		100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	Klirrfaktor-Meßbrücke an Ausgangsklemme "OUTPUT" schließen.	T102 (Diskriminator FT)	T102 Kern für minimale Verzerrung der rechten und linken Kanäle justieren.

Nr.	UKW-STEREO-DEKODER-ABGLEICH UNTER VERWENDUNG EINES ZÄHLERS	ALTERNATIV-MEß METHODE
6	1. Unmoduliers Mono-Signal 100 MHz in das Gerät speisen. (Vgl. Abb. 8) 2. FM muting/mode-Schalter auf "on/FM auto" stellen. 3. Zähler über einen Widerstand 100k ohm an TP301 schließen. 4. **VR301** auf 19 kHz ± 30 Hz einstellen.	1. Stereosignal entweder von einem Stereogenerator, oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 9 gezeigt.

Nr.	FM (UKW)-MESSENDER ANSCHLUSS	FM (UKW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	PILOTSIGNAL-UNTERDRÜCKUNGS-JUSTIERUNG (19 kHz)					
7	FM-SG an FM-Antennenanschluß gemäß Abb. 10 anschließen. (60 dB an Antennenanschluß anlegen.)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	Wechselstrom-Röhren-voltmeter oder Oszilloskop zwischen TP302 und Masse anschließen.	L301 (Pilotsignal-Unterdrückung 19 kHz) VR302 (Pilotsignal-Unterdrückung 19 kHz)	Auf minimale Ausgangsleistung abgleichen.
	AUSGANGSLECKTRÄGER-JUSTIERUNG					
8	FM-SG an FM-Antennenanschluß gemäß Abb. 11 anschließen. (60 dB an Antennenanschluß anlegen.)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	Oszilloskop an die "OUTPUT"-Anschlüsse anschließen. **Anmerkung:** Der Leckträger wird stark durch die Ablenkung der empfangenen Frequenz beeinflußt. Es ist daher wichtig, daß die Frequenz des FM-signal-frequenzgenerators (FM-SG) korrekt eingestellt wird.	VR303 (Ausgangs-leckträger)	VR303 so abgleichen, daß die Wellenform so ist, wie in Abb. 12-1 gezeigt. **Anmerkung:** Abb. 12-2 ist die durch schlechte Justierung von VR303 verursachte Wellenform. Abb. 12-3 ist die durch schlechte Justierung von VR301 oder VR302 verursachte Wellenform.
	STEREOVERZERRUNGS-JUSTIERUNG					
9	FM-SG an den FM-Antennenanschluß anschließen. (60 dB an den Antennenanschluß anlegen. (Pilotsignal 10% Mod., Stereosignal)	100.10 MHz (100% Mod. mit 400 Hz) (L-oder R-Betrieb)	100.10 MHz	Verzerrungs-Analysator durch Tiefpassfilter an "OUTPUT"-Anschlüsse des Gerätes anschließen. (fc = 15 kHz – 19 kHz)	T1 (IFT)	Den Kern von T1 so abgleichen, daß die Verzerrung des rechten Kanals minimal ist.
	TRENNUNGS-JUSTIERUNG					
10	FM-SG an den FM-Antennenanschluß anschließen. (Pilotsignal 10% Mod. Stereosignal)	100.10 MHz (1 kHz Modulat., 100%) (L-oder R-Betrieb)	100.10 MHz	Wechselstrom-Röhren-voltmeter durch Tiefpassfilter an die "OUTPUT"-Anschlüsse des Gerätes anschließen. (fc = 15 kHz – 19 kHz)	VR304 (Trennungs)	VR304 so abgleichen, daß die R-Ausgangsleistung minimal wird, wenn der Stereomodulator im L-Betrieb (L-Kanal-Modulation) ist, und daß die L-Ausgangs-leistung bei R-Betrieb minimal ist.
	SIGNALSTÄRKEPEGEL-JUSTIERUNG					
11	FM-SG an den FM-Antennenanschluß anschließen. (54 dB an den Antennenanschluß anlegen.)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	———	VR501 (Signalstärkepegel)	VR501 so abgleichen, daß 54 dB angezeigt wird. Überprüfen, daß der Signalstärkepegel 22 – 38 dB beträgt, wenn die Eingangsleistung 30 dB beträgt.



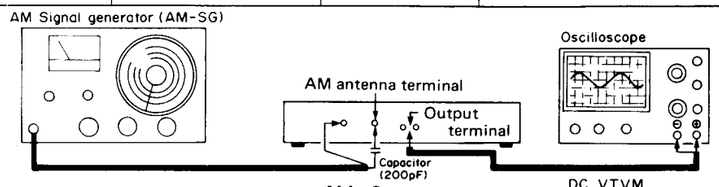


Abb. 6

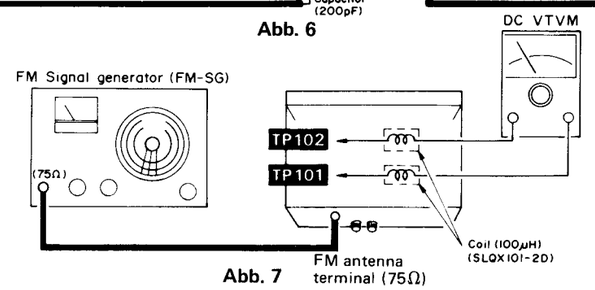
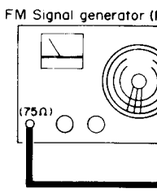
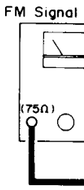
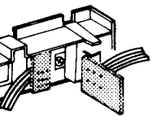


Abb. 7





■ ADJUST



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HSVERFAHREN

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EICHSVERFAHREN

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Kern für minimale
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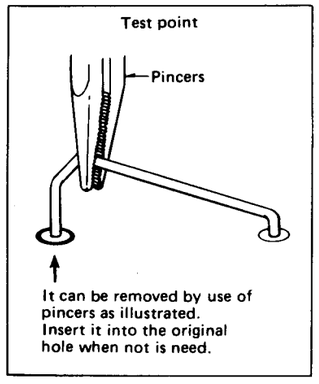
Kanäle justieren.

UKW-STEREO-DEKODER-ABGLEICH

Nr.	UNTER VERWENDUNG EINES ZÄHLERS	ALTERNATIV-MEß METHODE
6	1. Unmoduliers Mono-Signal 100 MHz in das Gerät speisen. (Vgl. Abb. 8) 2. FM muting/mode-Schalter auf "on/FM auto" stellen. 3. Zähler über einen Widerstand 100k ohm an TP301 schließen. 4. **VR301** auf 19 kHz ± 30 Hz einstellen.	1. Stereosignal entweder von einem Stereogenerator, oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 9 gezeigt.

Nr.	FM (UKW)-MESSENDER: ANSCHLUSS	FM (UKW)-MESSENDER: FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICH-SPUNKTE	ABGLEICHSVERFAHREN
	PILOTSIGNAL-UNTERDRÜCKUNGS-JUSTIERUNG (19 kHz)					
7	FM-SG an FM-Antennenanschluß gemäß Abb. 10 anschließen. (60 dB an Antennenanschluß anlegen.)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	Wechselstrom-Röhren-voltmeter oder Oszilloskop zwischen TP302 und Masse anschließen.	L301 (Pilotsignal-Unterdrückung 19 kHz) VR302 (Pilotsignal-Unterdrückung 19 kHz)	Auf minimale Ausgangsleistung abgleichen.
	AUSGANGSLECKTRÄGER-JUSTIERUNG					
8	FM-SG an FM-Antennenanschluß gemäß Abb. 11 anschließen. (60 dB an Antennenanschluß anlegen.)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	Oszilloskop an die "OUTPUT"-Anschlüsse anschließen. **Anmerkung:** **Der Leckträger wird stark durch die Ablenkung der empfangenen Frequenz beeinflußt. Es ist daher wichtig, daß die Frequenz des FM-signal-frequenzgenerators (FM-SG) korrekt eingestellt wird.**	VR303 (Ausgangs-leckträger)	VR303 so abgleichen, daß die Wellenform so ist, wie in Abb. 12-1 gezeigt. **Anmerkung:** Abb. 12-2 ist die durch schlechte Justierung von VR303 verursachte Wellenform. Abb. 12-3 ist die durch schlechte Justierung von VR301 oder VR302 verursachte Wellenform.
	STEREOVERZERRUNGS-JUSTIERUNG					
9	FM-SG an den FM-Antennenanschluß anschließen. (60 dB an den Antennenanschluß anlegen. (Pilotsignal 10% Mod., Stereosignal)	100.10 MHz (100% Mod. mit 400 Hz) (L-oder R-Betrieb)	100.10 MHz	Verzerrungs-Analysator durch Tiefpassfilter an "OUTPUT"-Anschlüsse des Gerätes anschließen. (fc = 15 kHz — 19 kHz)	T1 (IFT)	Den Kern von T1 so abgleichen, daß die Verzerrung des rechten Kanals minimal ist.
	TRENNUNGS-JUSTIERUNG					
10	FM-SG an den FM-Antennenanschluß anschließen. (Pilotsignal 10% Mod. Stereosignal)	100.10 MHz (1 kHz Modulat., 100%) (L-oder R-Betrieb)	100.10 MHz	Wechselstrom-Röhren-voltmeter durch Tiefpassfilter an die "OUTPUT"-Anschlüsse des Gerätes anschließen. (fc = 15 kHz — 19 kHz)	VR304 (Trennungs)	VR304 so abgleichen, daß die R-Ausgangsleistung minimal wird, wenn der Stereomodulator im L-Betrieb (L-Kanal-Modulation) ist, und daß die L-Ausgangsleistung bei R-Betrieb minimal ist.
	SIGNALSTÄRKEPEGEL-JUSTIERUNG					
11	FM-SG an den FM-Antennenanschluß anschließen. (54 dB an den Antennenanschluß anlegen.)	100.10 MHz (400 Hz Modulat., 100%)	100.10 MHz	———	VR501 (Signalstärkepegel)	VR501 so abgleichen, daß 54 dB angezeigt wird. Überprüfen, daß der Signalstärkepegel 22 — 38 dB beträgt, wenn die Eingangsleistung 30 dB beträgt.



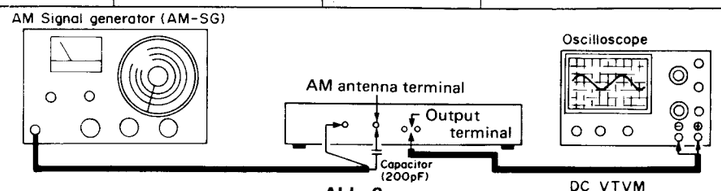


Abb. 6

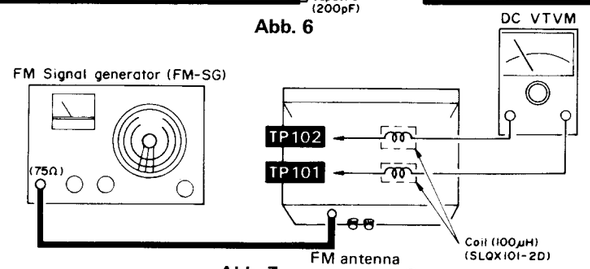


Abb. 7

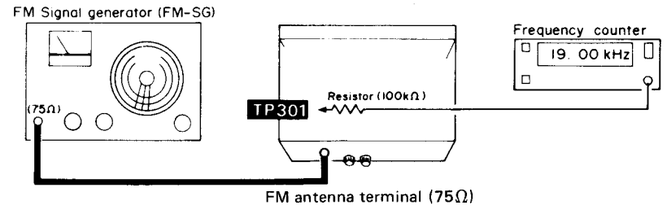
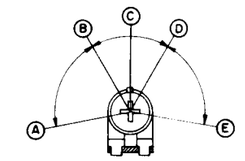


Abb. 8



Ⓐ–Ⓑ Ⓓ–Ⓔ : Stereo OFF position.
Ⓑ–Ⓓ : Stereo ON position. (indicator lighting)
Ⓒ : Adjust point of pilot circuit

Abb. 9

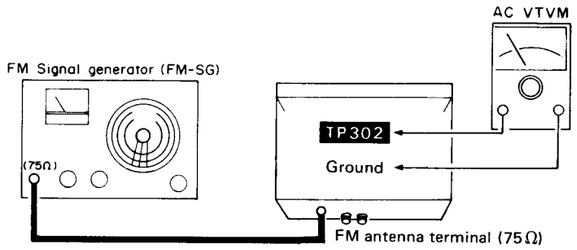


Abb. 10

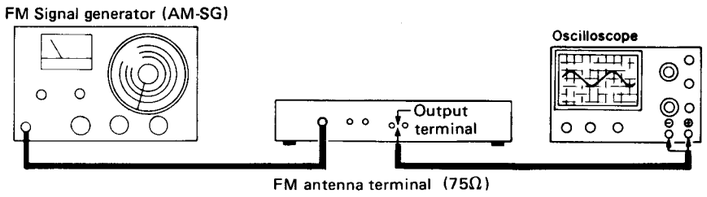


Abb. 11

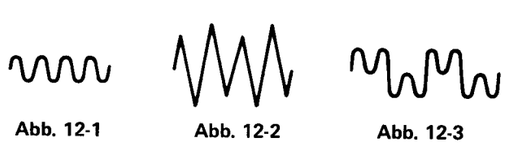
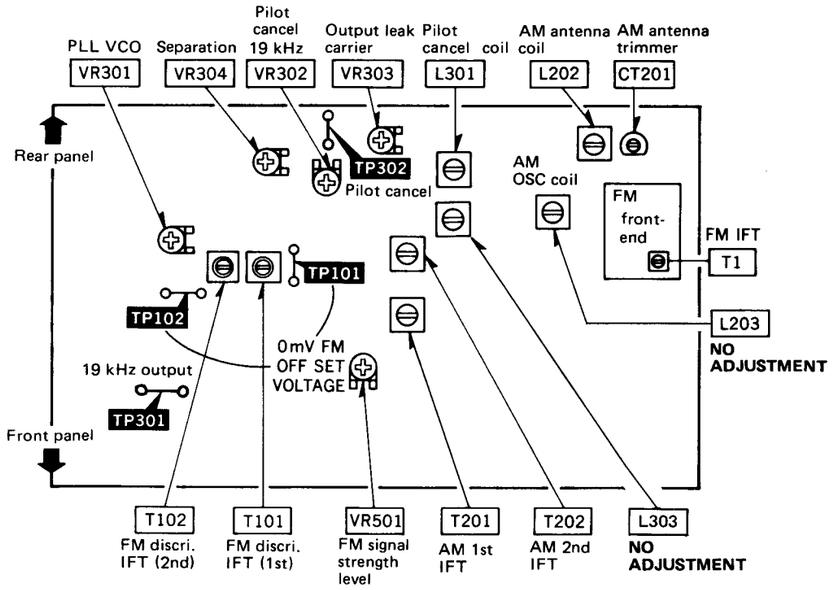


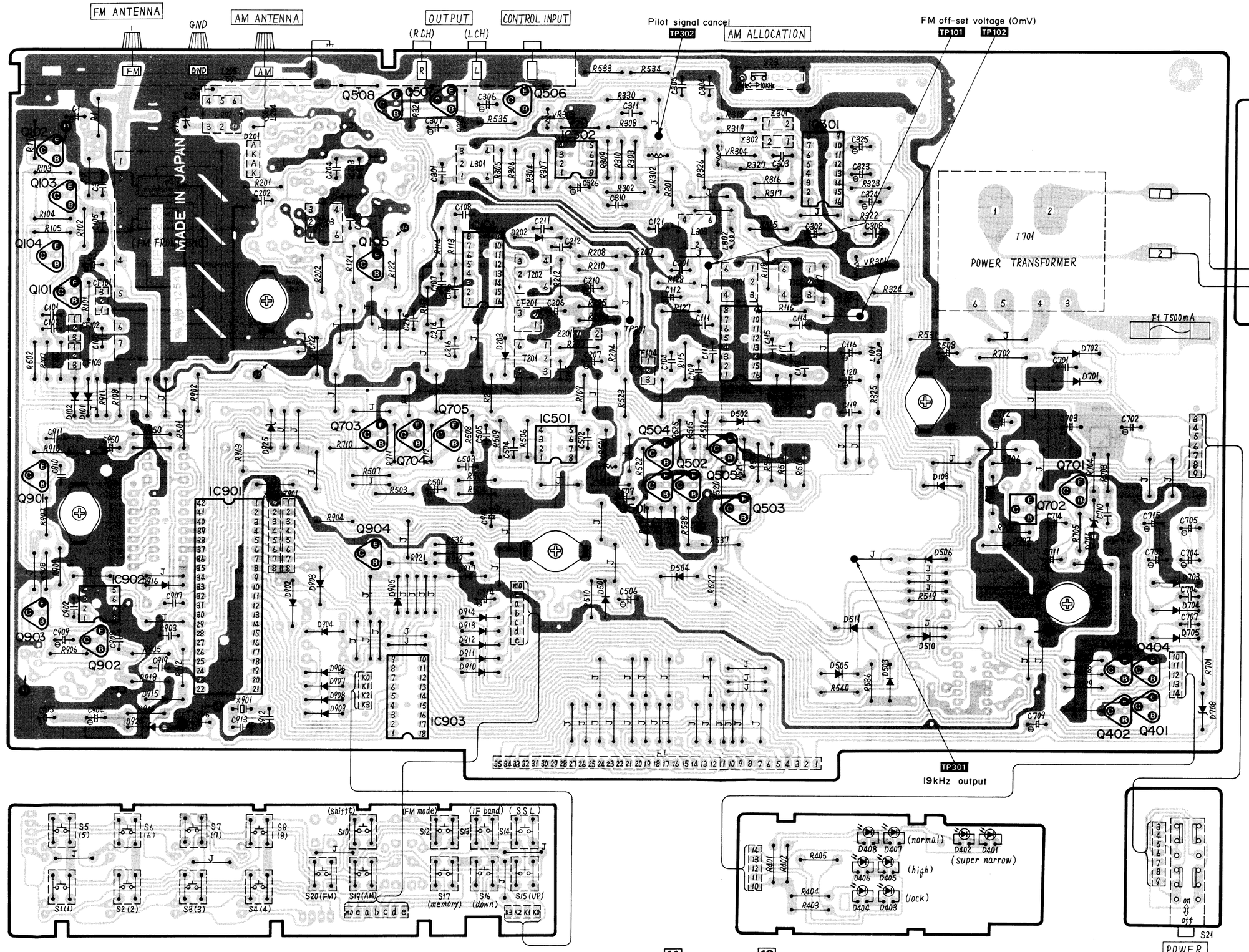
Abb. 12-1 Abb. 12-2 Abb. 12-3

■ ADJUSTMENT POINTS



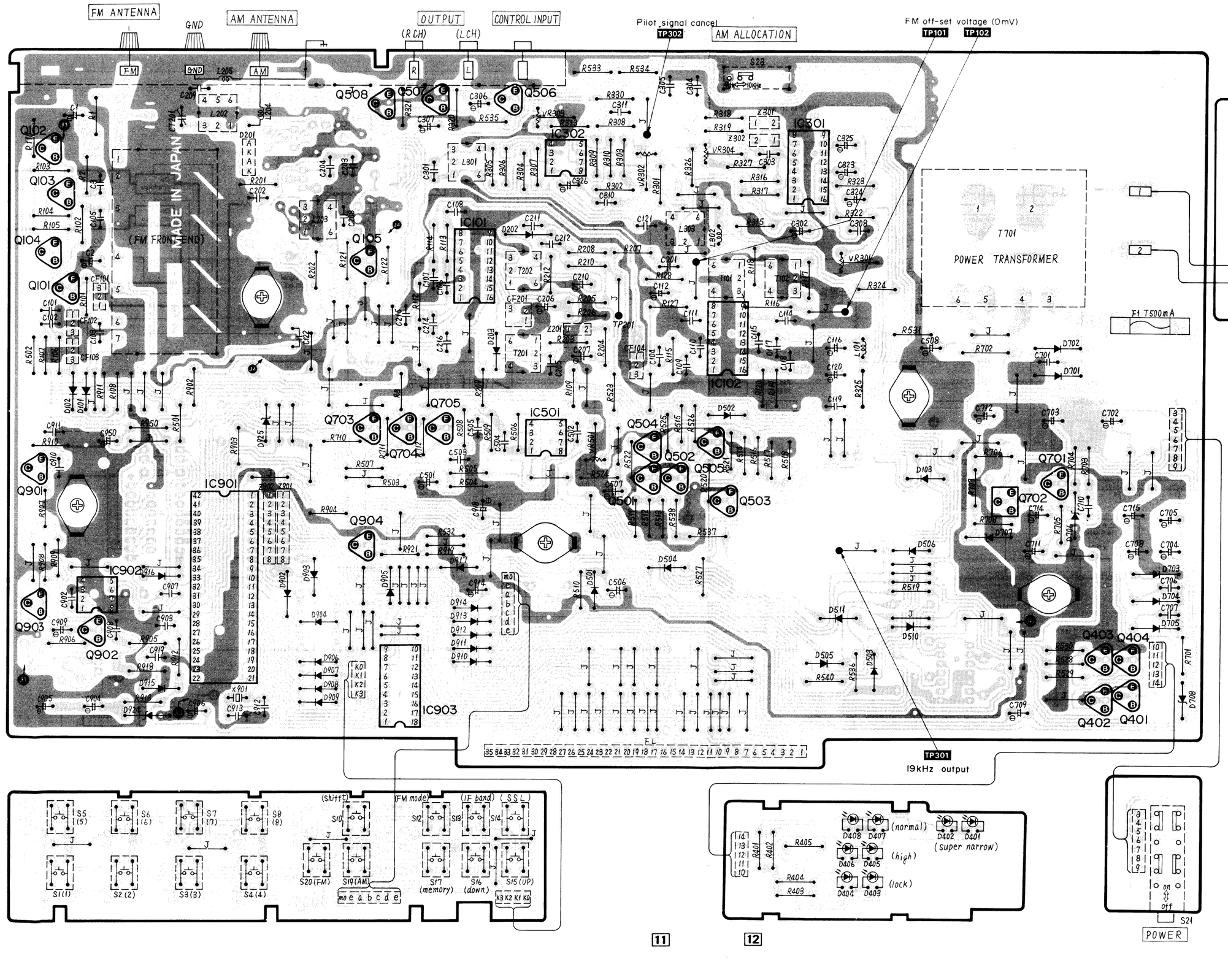
■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

Ground (Earth) lines

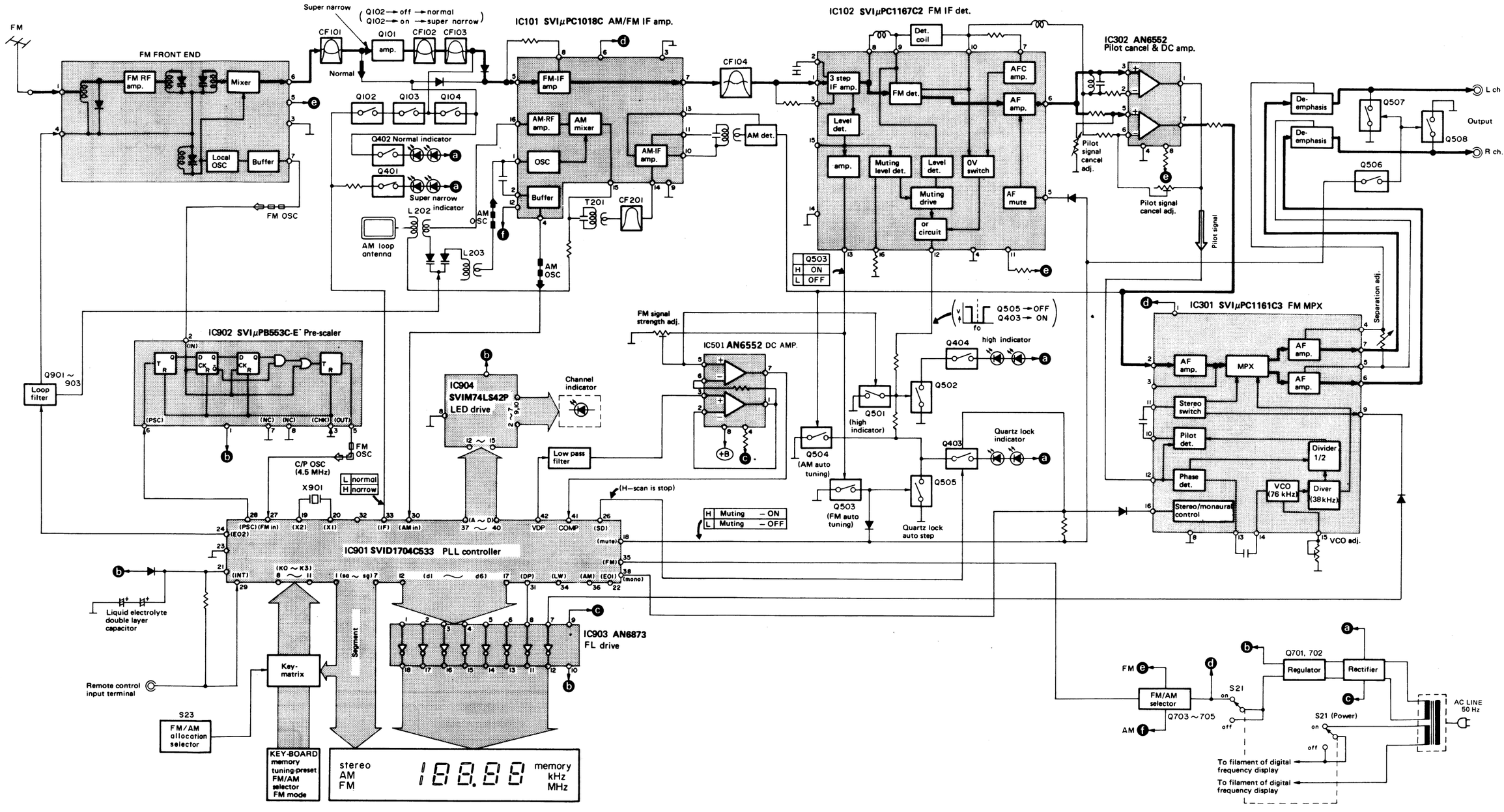


■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

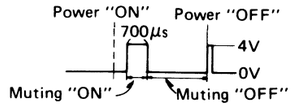
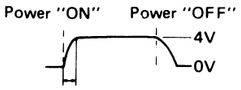
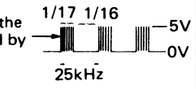
Ground (Earth) lines

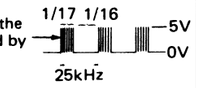


■ BLOCK DIAGRAM



■ FUNCTION OF TERMINAL (PLL CONTROLLER IC901)

Pin No.	Mark	Description of terminal
1	Sa	Segment signal output terminal for display. (Refer to Fig. 13)
2	Sb	
3	Sc	
4	Sd	
5	Se	
6	Sf	
7	Sg	
8	K0	Input terminal for key return signal from external key matrix. The output of segment terminals (a ~ g) is used as the key return signal source.
9	K1	
10	K2	
11	K3	
12	D6	Digit signal output terminal for display. (Refer to Fig. 13)
13	D5	
14	D4	
15	D3	
16	D2	This is the output terminal to eliminate shock noise due to unlocking at PLL. When the CE terminal is at low level, the output from this terminal is at high level. 
17	D1	
18	MT	
19	X2	Connecting terminal for crystal oscillator. The crystal connected is at 4.5 MHz.
20	X1	
21	VDD	Power supply terminal of the device.
22	E01	Not used in this unit.
23	GND	Ground terminal.
24	E02	When the divided oscillation frequency is higher than the standard frequency, H-level output is delivered from these terminals. When it is lower, L-level (0V) output is delivered. When they coincide, it results in floating.
25	CE	This is the selected signal input terminal of the device. When operating the device, make the level high, and when it is not used, make the level low. When this terminal is at low level, all the segment (a ~ g) and digits (D1 ~ D6) terminals are off, but the memory is held.  **The device does not operate during this period.**
26	SD	This input terminal detects the reception of a broadcasting station. The voltage is 4.2V during reception, and otherwise 0V.
27	FM	Input terminal for FM OSC output frequency-divided to 1/16 or 1/17 by pre-scaler.
28	PSC	This is the terminal to deliver the frequency dividing ratio changeover output signal to the pre-scaler. The terminal continues to produce pulses at the rise of the signal applied to FM terminal (27) until the content of the inside swallow counter is 0. When the swallow counter comes to 0; the terminal level becomes low, then the frequency dividing ratio of pre-scaler is 1/16. **Pulse two times larger than the value that cannot be divided by VCO/16.** 
29	INT	This is the interrupt demand signal input terminal. The signal from the control input terminal is put into this terminal, demanding for interruption, then the flow of program will be unconditionally shifted to the address No. 1.
30	AM	Inp
31	Dp	2-b ind tio
32	Lamp	
33	IF	4-B ter ter mo (36
34	LW	
35	FM	
36	AM	
37	A	4-b Cha
38	B	
39	C	
40	D	

iton of terminal
al detects the réception of ation. The voltage is 4.2V and otherwise 0V.
FM OSC output frequency- 1/17 by pre-scaler.
nal to deliver the frequency ngeover output signal to the rminal continues to produce of the signal applied to FM il the content of the inside is 0. When the swallow o 0; the terminal level be- the frequency dividing ratio 6. 
rupt demand signal input nal from the control input o this terminal, demanding then the flow of program nally shifted to the address

Pin No.	Mark	Descripiton of terminal
30	AM	Input terminal for AM OSC output.
31	Dp	2-bit input/output. Dp (31) is decimal point indication output terminal for digital indication. Lamp (32) is not used in this unit.
32	Lamp	
33	IF	4-Bit output port. FM (35) is FM/AM output terminal; 5V in FM and 0V in AM. IF (33) terminal level is "H" at "L" narrow in normal mode. LW (34) is not used in this unit. AM (36) not used in this unit.
34	LW	
35	FM	
36	AM	
37	A	4-bit output port. Channel light.
38	B	
39	C	
40	D	

Pin No.	Mark	Descripiton of terminal
41	COMP	1-bit input port. Comparison voltage input terminal, regulating the duty pulses to let it follow the signal voltage.
42	VDP	Variable duty pulse at 1.34 kHz is delivered to compare it with signal voltage.

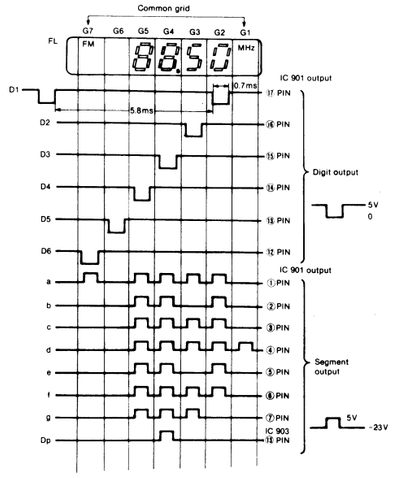


Fig. 13

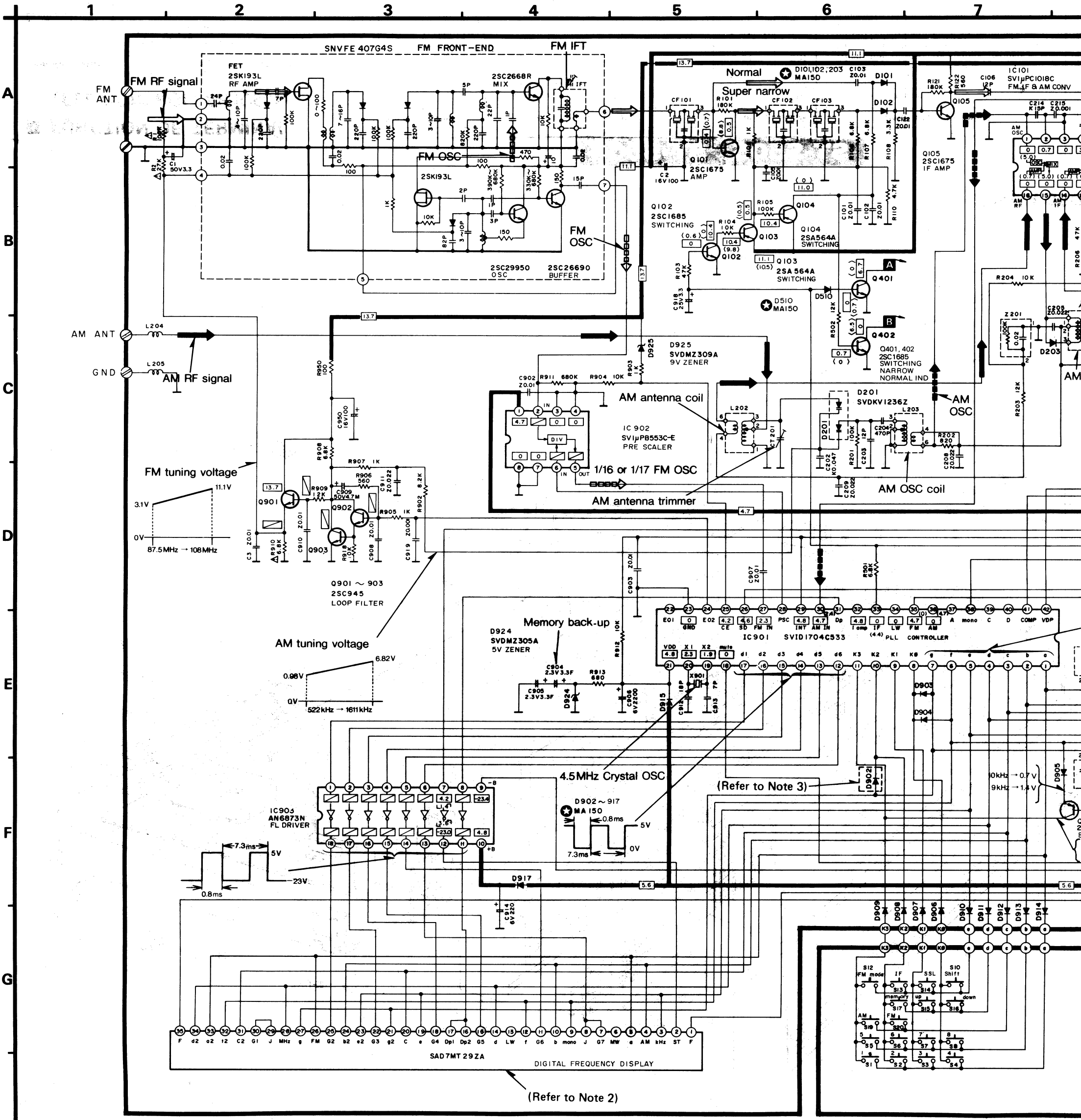
■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part please use the part No. in the replacement part list.

Note1:

1. **S1 ~ S8** : Preset tuning switch. 1 ~ 16 CH
2. **S10** : FM frequency shift switch. (off ⟷ 25 kHz)
3. **S12** : FM mode switch. (auto ⟷ mono)
4. **S13** : FM IF band selector switch. normal ⟷ super narrow
5. **S14** : FM signal strength level call switch. off ⟷ on
6. **S15** : Tuning (up) switch. (manual ⟷ auto) [up : tuning to higher frequency]
7. **S16** : Tuning (down) switch. (manual ⟷ auto) [down : tuning to lower frequency]
8. **S17** : Memory switch. (manual ⟷ auto)
9. **S19** : AM selector switch.
10. **S20** : FM selector switch.
11. **S21** : Power source switch in **"on"** position.
12. **S23** : AM (MW) allocation switch in **"10 kHz step"** positio 9 kHz step ⟷ 10 kHz step

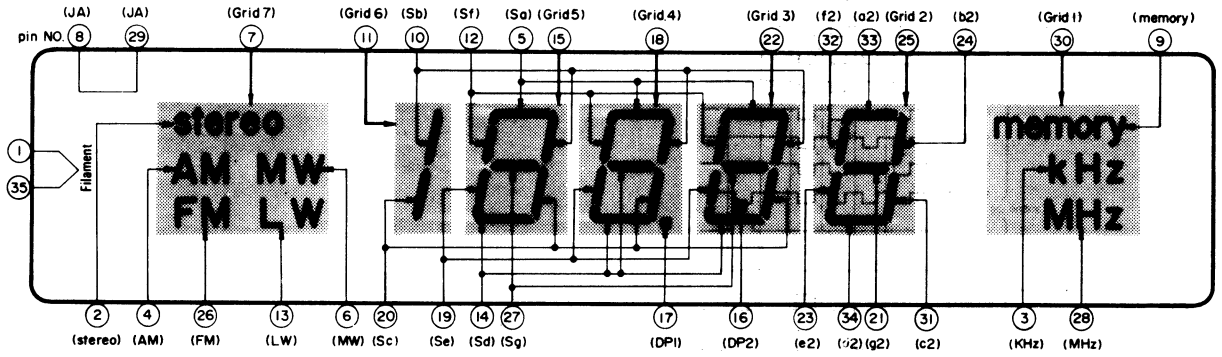


nes. AF signal lines
FM OSC
AM OSC

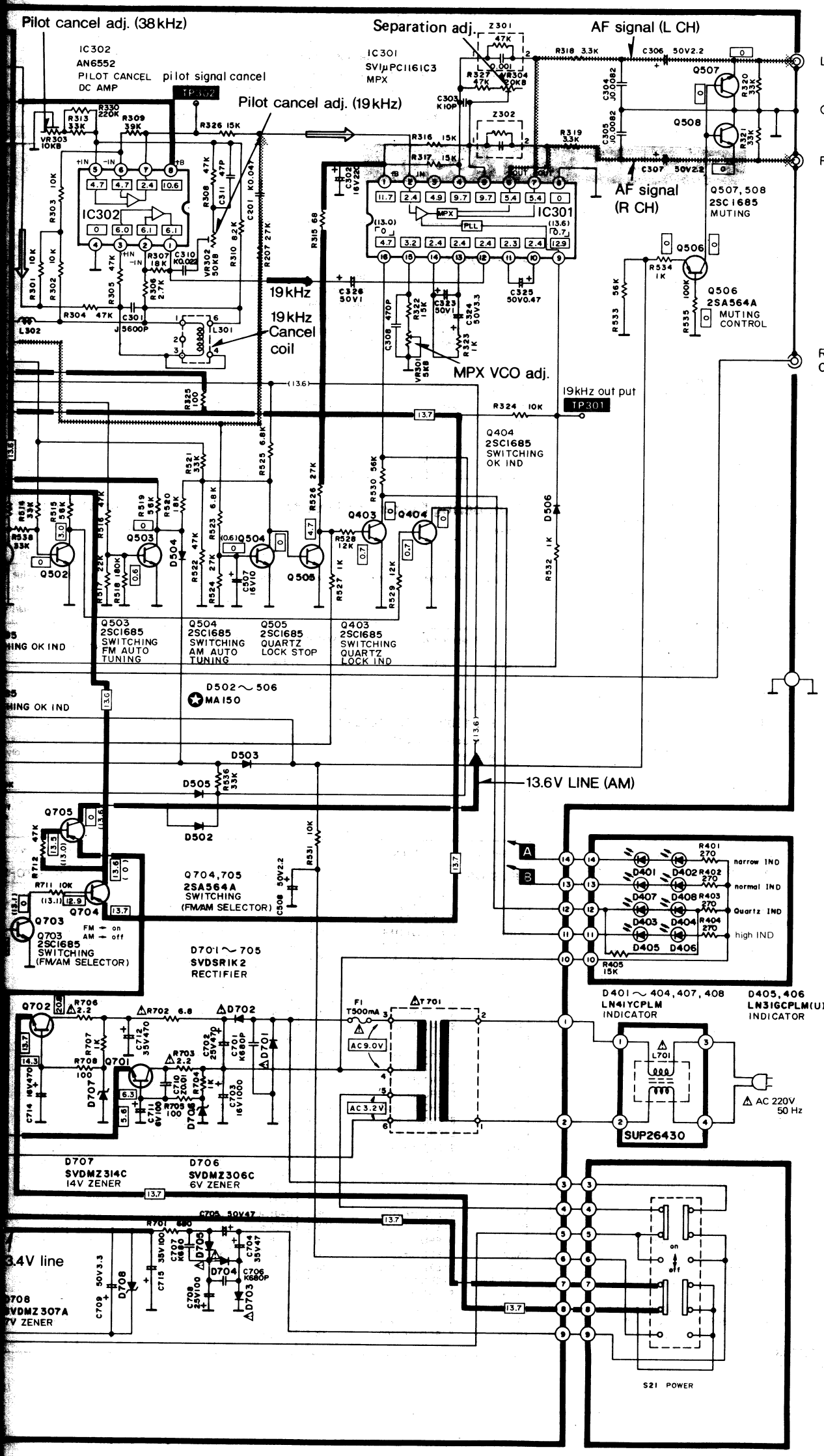
mark have special characteristics important for
components, use only manufacturer's specified

Note 2 :

- **Digital frequency display tube (FL)**



12 13 14 15 16 17 18 19



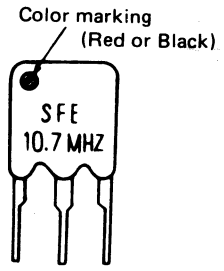
21

Note 3:

- **Use of ceramic filters in pairs**

The ceramic filters (CF101 ~ CF104) for FM-IF circuit are available in two ranks. For this machine, be sure to use the ceramics of the same rank in a pair.

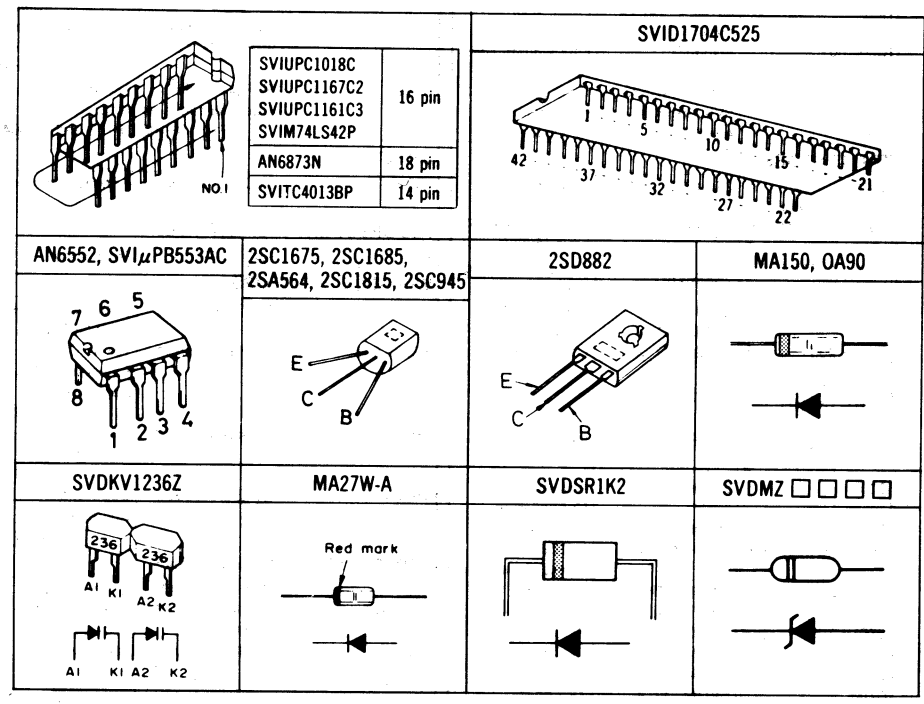
At repairing and replacement, pay close attention to the diode (D902) for use as different diodes must be used depending on each rank of the ceramic filters.



RANK (Color)	D902	CENTER FREQUENCY
Black	O	10.65 MHz
Red	X	10.70 MHz

Note: O Mark Diode is used.
X Mark Diode is not used.

- **Terminal guide of transistors, IC's and diodes**



22

auto)
]
auto)
y]
)

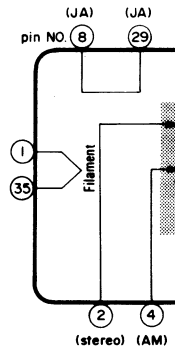
z step" position.

13. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in [ ] stand for DC voltage in FM signal (monaural) reception mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM stereo signal reception mode.
    * Figures in ( ) stand for DC voltage in AM signal reception mode.
    * Figures in < > stand for DC voltage in super narrow condition mode

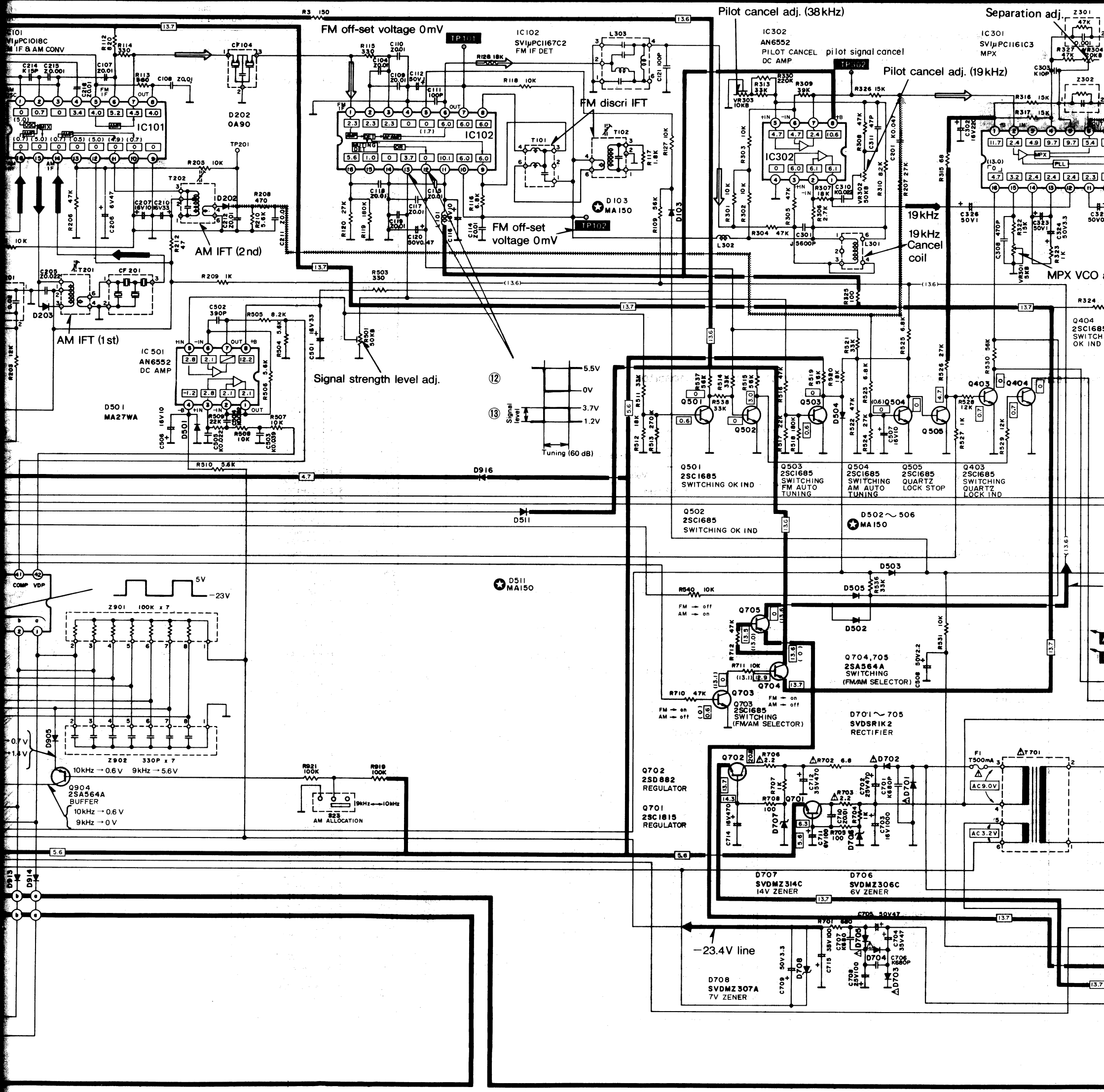
14. Positive voltage lines. AF signal lines
    FM signal FM OSC
    AM signal AM OSC
15. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety.
    When replacing any of these components, use only manufacturer's specified parts.

Note 2:

- **Digital frequ**



8 9 10 11 12 13 14



■ REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice:
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
3. Ⓚ -marked parts are used for black only, while ○-marked parts are for silver type only.
4. Part other than Ⓚ -and ○-marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. The " **S** " mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity per set.

Black type model No. : ST-S505 (K)

Area

* [EGA] is available in F.R. Germany.

Ref. No.		Part No.	Description	
ACCESSORIES				
A1		SJP2129-5	Connection Cord	(1)
A2		SSA901	Cord,Indoor Antenna	(1)
A3		SSA605-1	Loop Antenna	(1)
A4		SMA231	Holder,Loop Antenna	(1)
A5		SMA233-1	Holder,Loop Antenna	(1)
A6		XTN3+10AFZ	Screw,Loop Antenna Holder	(2)
A7		SQF11493	Instruction Book	(1)
PACKING PARTS				
P1	○	SPP697	Polyethylene Bag	(1)
P1	Ⓚ	SPP647	Polyethylene Bag	(1)
P2		SPS3493	Pad,Front Side	(1)
P3		SPS3495	Pad,Rear Side	(1)
P4		SPG4259	Carton Box	(1)

Ref. No.		Part No.	Description	
INTEGRATED CIRCUITS				
IC101		SVIUPC1018C	FM IF & AM Converter	
IC102		SVIUPC1167C2	FM IF Det.	
IC301		SVIUPC1161C3	MPX	
IC302,501		AN6552F	Pilot Cancel DC Amp., DC Amp.	
IC901		SVID1704C533	Controller	
IC902		SVIUPB553AC	Pre-Scaler	
IC903		AN6873N	FL Driver	
TRANSISTORS				
Q101	$	2SC1675-L	IF Amp.	
Q102,401~404, 501~505,507,508, 703,	$	2SC1685-Q	Switching,Quartz Lock,Muting	
Q103,104,506,704, 705,904	$	2SA564AQ	Switching,Muting Control	
Q701		2SC1815-Y	Regulator	
Q702		2SD793-P	Regulator	
Q901~903	$	2SC945-Q	Loop Filter	
DIODES				
D101~103,203, 502~506,510,511 902,903,905~919	$	MA162A	Switching	
D201		SVDKV1236Z	AM Variable Capacitance Detection	
D202	$	20A90		
D401~404,407,408		LN41YCPHL	L.E.D(Narrow, Nomal,Quartz)	
D405,406		LN31GCPHL	L.E.D(OK)	
D501		MA27W-A		
D701~705	⚠$	SVDSR1K2	Rectifier	
D706		SVDMZ306C	6V,Zener	
D707		SVDMZ314C	14V,Zener	
D708		SVDMZ307A	7V,Zener	
D924		SVDMZ305A	5V,Zener	
D925		SVDMZ309A	9V,Zener	
COILS				
L101,302		SLQX101-3M	Choke	
L202		SLA2C5-P	AM Antenna	
L203		SL02C29R-P	AM OSC	
L204,205		SLQZ12G1-D	Choke	
L301		SLM1C57-Z	19kHz, Cancel	
L303		SLM1C69-P		
L701		SLQZ650MH49	Choke	
TRANSFORMERS				
T101		SLI4C541-Z	FM IFT	
T102		SLI4C543-Z	FM IFT	
T201		SLI2C127-M	AM IFT	
T202		SLI2C413	AM IFT	
T701	⚠	SLT5K135	Power Source	
VARIABLE CAPACITOR				
CT201		SVCTZ03T110F	AM Antenna	
FM FRONT END				
		SNVFE407G4S		

Ref. No.		Part No.	Description	
CERAMIC FILTERS				
CF101~103	{	SVFE107MZ2-A	FM,10.7MHz(Red)	
	{	SVFE107MZ2-D	FM,10.65MHz (Black)	
CF104	{	SVFE107MX2-A	FM,10.7MHz(Red)	
	{	SVFE107MX2-D	FM,10.65MHz (Black)	
CF201		SVFSFP450HT	AM,450kHz (Use pair ranks as same as CF101,CF102,CF103 and CF104)	
CRYSTAL				
X901		SVQ43U452-N	4.5MHz Counter OSC	
FLUORESCENT DISPLAY TUBE				
FL		SAD7MT29ZA	Frequency	
VARIABLE RESISTORS				
VR301		EVN75AA00B53	MPX VCO Adjustment,5kΩ(B)	
VR302,501		EVN58AA00B54	19kHz Cancel Adjustment,SSL Adjustment, 50kΩ(B)	
VR303		EVN58AA00B14	38kHz Cancel Adjustment, 10kΩ(B)	
VR304		EVN58AA00B25	Separation Adjustment, 200kΩ(B)	
COMPONENT COMBINATIONS				
Z201		EXRP203Z104T	0.02μF,100kΩ	
Z301,302		EXRP102K473T	0.001μF,47kΩ	
Z901		EXBP87104K	100kΩ(X7)	
Z902		EXFP7331MW	330pF(X7)	
FUSE				
F1	⚠	XBA2C05TR0	250V,T500mA	
SWITCHES				
S1~8,10,12~17 19,20		SSG13	Preset,FM Mode, FM IF Band Select, Tuning,Memory FM and AM Mode	
S21	⚠	SSH183	Power Source	
S23		SSS67	AM Allocation	
CABINET and CHASSIS PARTS				
1	○	SGWTS505E	Front Panel,Ass'y (Silver)	(1)
1	Ⓚ	SGWTS505KE	Front Panel,Ass'y (Black)	(1)
2	○	SGX7465-1	Panel,Button(Silver)	(1)
2	Ⓚ	SGX7465-2	Panel,Button(Black)	(1)
3		SBC561-2	Button,Front Sub Panel	(1)
4	○	SGX7455	Front Sub Panel (Silver)	(1)
4	Ⓚ	SGX7455-1	Front Sub Panel (Black)	(1)
5		SBC557-8	Button,Preset Switch (CH1)	(1)

Ref. No.		Part No.	Description	
6		SBC557-9	Button,Preset Switch (CH2)	(1)
7		SBC557-10	Button,Preset Switch (CH3)	(1)
8		SBC557-11	Button,Preset Switch (CH4)	(1)
CABINET and CHASSIS PARTS				
9		SBC557-12	Button,Preset Switch (CH5)	(1)
10		SBC557-13	Button,Preset Switch (CH6)	(1)
11		SBC557-14	Button,Preset Switch (CH7)	(1)
12		SBC557-15	Button,Preset Switch (CH8)	(1)
13		SUS297	Spring,Button	(8)
14		SGU331	Transparent Panel	(1)
15	○	SKD4591	Tinted Plate(Silver)	(1)
15	Ⓚ	SKD4592	Tinted Plate(Black)	(1)
16		SBC337-1	Button,Power Switch	(1)
17		SKL245-2	Rubber	(2)
18		SUW1891-1	Bracket,FL	(1)
19		SUW1893-1	Bracket,Power Switch	(1)
20		SDU167	Filter,FL	(1)
21	○	SKCTS505E	Cabinet(Silver)	(1)
21	Ⓚ	SKCTS505KE	Cabinet(Black)	(1)
22		SGP3110-1	Rear Sub Panel	(1)
23		SHR127	Bushing,AC Cord	(1)
24	⚠$	SJA88	AC Cord	(1)
25		SGPTS505G	Rear Panel,Ass'y	(1)
25-1		SKL245-2	Foot	(4)
26		SJF8605N	Terminal Board	(1)
27		SUW2027	Bracket	(1)
SCREWS				
N1	$	XTB3+8BFZ	Tapping,⊕3×8	(3)
N2		XTBS3+8FFYR1	Tapping with Detent, ⊕3×8	(1)
N3	$	XTN3+8BFN	Tapping,⊕3×8	(3)
N4	$	XSN3+6S	⊕3×6	(2)
N5	$	XTB3+8BFZ	Tapping,⊕3×8	(2)
N6		XTBS3+8FFYR1	Tapping with Detent, ⊕3×8	(5)
N7	$	XTB3+14BFN	Tapping,⊕3×14	(1)
N8	$	XTB3+10BFZ	Tapping,⊕3×10	(2)
N9	○	SNE2095-2	Tapping(Silver)	(4)
N9	Ⓚ	SNE2095-1	Tapping(Black)	(4)
N10	$	XTB3+8BFZ	Tapping,⊕3×8	(2)
N11		XTBS3+8BFZ1	Tapping with Detent ⊕3×8	(1)
WASHERS				
N12	$	XWG3FN	Plain, φ3	(3)
N13	$	XWA3B	Spring, φ3	(2)

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type		Wattage		Tolerance	
ERD	: Carbon	25 : 1/4W S1 : 1/2W		J	: ± 5%

* **The unit of resistance is OHM (Ω).**
  K = 1000Ω , M = 1000KΩ.
* **The unit of capacitance is MICROFARAD (μF)**
  P = 10^{-6} μF.

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type		Voltage: ECEA Type	Voltage: Other	Tolerance
ECEA	: Electrolytic	OJ : 6.3V	1H : 50V DC	C : ± 0.25pF
ECCD	: Ceramic	1A : 10V	2H : 500V DC	J : ± 5%
ECKD	: Ceramic	1C : 16V	2R3 : 2.3V DC	K : ± 10%
ECQM	: Polyester	1E : 25V		Z : +80%, −20%
ECQP	: Polypropylene	1H : 50V		
EECW	: Liquid electrolyte double layer capacitor	50 : 50V		
		25 : 25V		
		1V : 35V		

Ref. No.		Part No.	Value
RESISTORS			
R1	$	ERD25TJ104	100K
R2	$	ERD25TJ273	27K
R3	$	ERD25FJ151	150
R101	$	ERD25TJ184	180K
R102	$	ERD25FJ102	1K
R103	$	ERD25TJ473	47K
R104	$	ERD25FJ103	10K
R105	$	ERD25TJ104	100K
R106,107	$	ERD25FJ682	6.8K
R108	$	ERD25FJ332	3.3K
R109	$	ERD25TJ563	56K
R110	$	ERD25FJ472	4.7K
R112	$	ERD25FJ821	820
R113	$	ERD25FJ561	560
R114,115	$	ERD25FJ331	330
R116	$	ERD25FJ682	6.8K
R117	$	ERD25FJ182	1.8K
R118	$	ERD25TJ153	15K
R119	$	ERD25TJ184	180K
R120	$	ERD25TJ273	27K
R121	$	ERD25TJ184	180K
R122	$	ERD25FJ561	560
R127	$	ERD25FJ103	10K
R128	$	ERD25TJ183	18K
R201	$	ERD25TJ104	100K
R202	$	ERD25FJ821	820
R203	$	ERD25TJ123	12K
R204,205	$	ERD25FJ103	10K
R206	$	ERD25TJ473	47K
R207	$	ERD25TJ273	27K
R208	$	ERD25FJ471	470
R209	$	ERD25FJ102	1K

Ref. No.		Part No.	Value
RESISTORS			
R210	$	ERD25FJ562	5.6K
R212	$	ERD25FJ470	47
R301,302	$	ERD25FJ103	10K
R303	$	ERD25FJ103	10K
R304,305	$	ERD25TJ473	47K
R306	$	ERD25FJ272	2.7K
R307	$	ERD25TJ183	18K
R308	$	ERD25TJ473	47K
R309	$	ERD25TJ393	39K
R313	$	ERD25TJ333	33K
R315	$	ERD25FJ680	68
R316,317	$	ERD25TJ153	15K
R318,319	$	ERD25FJ332	3.3K
R320,321	$	ERD25TJ333	33K
R322	$	ERD25TJ153	15K
R323	$	ERD25FJ102	1K
R324	$	ERD25FJ103	10K
R325	$	ERD25FJ101	100
R326	$	ERD25TJ153	15K
R327	$	ERD25TJ473	47K
R330	$	ERD25TJ224	220K
R401,402	$	ERD25FJ271	270
R403,404	$	ERD25FJ271	270
R405	$	ERD25TJ153	15K
R501	$	ERD25FJ682	6.8K
R502	$	ERD25TJ123	12K
R503	$	ERD25FJ331	330
R504	$	ERD25FJ562	5.6K
R505	$	ERD25FJ822	8.2K
R506	$	ERD25FJ562	5.6K

Ref. No.		Part No.	Value
RESISTORS			
R507,508	$	ERD25FJ103	10K
R509	$	ERD25TJ223	22K
R510	$	ERD25FJ562	5.6K
R511	$	ERD25TJ333	33K
R512	$	ERD25TJ183	18K
R513	$	ERD25TJ274	270K
R514	$	ERD25TJ333	33K
R515	$	ERD25TJ563	56K
R516	$	ERD25TJ473	47K
R517	$	ERD25TJ223	22K
R518	$	ERD25TJ184	180K
R519	$	ERD25TJ563	56K
R520	$	ERD25TJ183	18K
R521	$	ERD25TJ333	33K
R522	$	ERD25TJ473	47K
R523	$	ERD25FJ682	6.8K
R524	$	ERD25TJ273	27K
R525	$	ERD25FJ682	6.8K
R526	$	ERD25TJ273	27K
R527	$	ERD25FJ102	1K
R528,529	$	ERD25TJ123	12K
R530	$	ERD25TJ563	56K
R531	$	ERD25FJ103	10K
R532	$	ERD25FJ102	1K
R533	$	ERD25TJ563	56K
R534	$	ERD25FJ102	1K
R535	$	ERD25TJ104	100K
R536	$	ERD25TJ333	33K
R537	$	ERD25TJ563	56K
R538	$	ERD25TJ333	33K

Ref. No.		Part No.	Value
RESISTORS			
R540	$	ERD25FJ103	10K
R701	$	ERD25FJ681	680
R702	⚠$	ERD25FJ6R8	6.8
R703	⚠$	ERD25FJ2R2	2.2
R704	$	ERD25FJ102	1K
R705	$	ERD25FJ101	100
R706	⚠$	ERD25FJ2R2	2.2
R707	⚠	ERDS1FJ102	1K
R708	$	ERD25FJ101	100
R710	$	ERD25TJ473	47K
R711	$	ERD25FJ103	10K
R712	$	ERD25TJ473	47K
R902	$	ERD25FJ822	8.2K
R903	$	ERD25FJ102	1K
R904	$	ERD25FJ103	10K
R905	$	ERD25FJ102	1K
R906	$	ERD25FJ561	560
R907	$	ERD25FJ102	1K
R908	$	ERD25FJ682	6.8K
R909	$	ERD25TJ123	12K
R910	$	ERD25FJ682	6.8K
R911	$	ERD25TJ684	680K
R912	$	ERD25FJ103	10K
R913	$	ERD25FJ681	680
R918	$	ERD25FJ103	10K
R919	$	ERD25TJ104	100K
R921	$	ERD25TJ104	100K
R950	$	ERD25FJ101	100

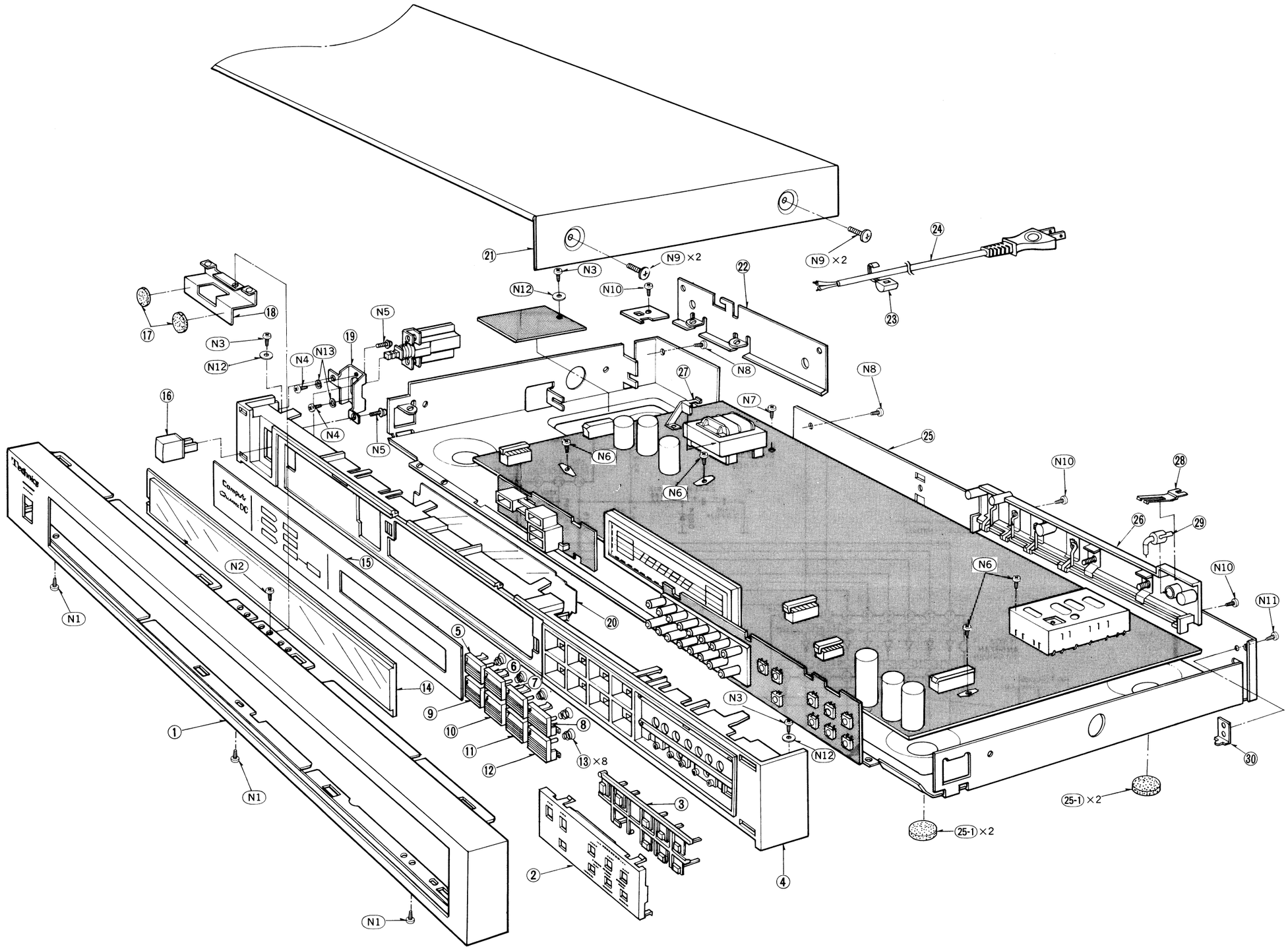
Ref. No.		Part No.	Value
CAPACITORS			
C1	$	ECEA1HS3R3	
C2	$	ECEA1HS101	
C3	$	ECKD1H103ZF	
C101,102	$	ECKD1H103ZF	
C103,104	$	ECKD1H103ZF	
C105	$	ECKD1H103ZF	
C106	$	ECCD1H120KC	
C107,108	$	ECKD1H103ZF	
C109,110	$	ECKD1H103ZF	
C111	$	ECCD1H101K	
C112	$	ECEA50Z1	
C114,115	$	ECKD1H103ZF	
C116	$	ECEA1CS100	
C117,118	$	ECKD1H103ZF	
C119	$	ECKD1H103ZF	
C120	$	ECEA50ZR47	
C121	$	ECCD1H101KC	
C122	$	ECKD1H103ZF	
C201,202	$	ECQM1H473JZ	
C203	$	ECCD1H120KC	
C204		ECQP1471JZ	
C205	$	ECKD1H223ZF	
C206	$	ECEA1AS470	
C207	$	ECEA1HS100	
C208,209	$	ECKD1H223ZF	
C210	$	ECEA1CS330	
C211,212	$	ECKD1H103ZF	
C214	$	ECCD1H150KC	
C215	$	ECKD1H102ZF	
C216	$	ECKD1H103ZF	
C301		ECQP1562JZ	
C302	$	ECEA1CS221	
C303	$	ECCD1H100KC	
C304,305	$	ECQM1H822JZ	
C306,307	$	ECEA50Z2R2	
C308		ECQP1471JZ	
C310	$	ECQM1H223JZ	
C311	$	ECCD1H470K	
C323	$	ECEA50Z1	
C324	$	ECEA50Z3R3	
C325	$	ECEA50ZR47	
C326	$	ECEA50Z1	
C501	$	ECEA1CS330	
C502	$	ECKD1H391KB	
C503	$	ECQM1H393JZ	
C504	$	ECQM1H823JZ	
C505	$	ECQM1H223JZ	
C506,507	$	ECEA1HS100	
C508	$	ECEA50Z2R2	
C701	$	ECKD2H681KB	
C702	$	ECEA1ES471	
C703	$	ECEA1S102	
C704	$	ECEA1HS470	
C705	$	ECEA1HS470	
C706,707	$	ECKD2H681KB	
C708	$	ECEA1ES101	
C709	$	ECEA50Z3R3	
C710	$	ECKD1H103ZF	
C711	$	ECEA1AS101	
C712	$	ECEA1VS471	
C714	$	ECEA1CS471	
C715	$	ECEA1VS101	
C902,903	$	ECKD1H103ZF	
C904,905		EECW2R3A3R3	
C906	$	ECEA0JS222	
C907,908	$	ECKD1H103ZF	
C909	$	ECEA50M4R7R	
C910	$	ECKD1H103ZF	
C911	$	ECKD1H223ZF	
C912	$	ECCD1H180KC	
C913	$	ECCD1H070CC	
C914	$	ECEA1AS221	
C918	$	ECEA50Z3R3	
C919	$	ECKD1H102ZF	
C950	$	ECEA1ES101	

Tolerance
C : ± 0.25pF
J : ± 5%
K : ± 10%
Z : +80%, −20%

		Part No.	Value
RS			
	$	ERD25FJ103	10K
	$	ERD25FJ681	680
⚠	$	ERD25FJ6R8	6.8
⚠	$	ERD25FJ2R2	2.2
	$	ERD25FJ102	1K
	$	ERD25FJ101	100
⚠	$	ERD25FJ2R2	2.2
⚠		ERDS1FJ102	1K
	$	ERD25FJ101	100
	$	ERD25TJ473	47K
	$	ERD25FJ103	10K
	$	ERD25TJ473	47K
	$	ERD25FJ822	8.2K
	$	ERD25FJ102	1K
	$	ERD25FJ103	10K
	$	ERD25FJ102	1K
	$	ERD25FJ561	560
	$	ERD25FJ102	1K
	$	ERD25FJ682	6.8K
	$	ERD25TJ123	12K
	$	ERD25FJ682	6.8K
	$	ERD25TJ684	680K
	$	ERD25FJ103	10K
	$	ERD25FJ681	680
	$	ERD25FJ103	10K
	$	ERD25TJ104	100K
	$	ERD25TJ104	100K
	$	ERD25FJ101	100

Ref. No.		Part No.	Value
CAPACITORS			
C1	$	ECEA1HS3R3	3.3
C2	$	ECEA1HS101	100
C3	$	ECKD1H103ZF	0.01
C101,102	$	ECKD1H103ZF	0.01
C103,104	$	ECKD1H103ZF	0.01
C105	$	ECKD1H103ZF	0.01
C106	$	ECCD1H120KC	12p
C107,108	$	ECKD1H103ZF	0.01
C109,110	$	ECKD1H103ZF	0.01
C111	$	ECCD1H101K	100p
C112	$	ECEA50Z1	1
C114,115	$	ECKD1H103ZF	0.01
C116	$	ECEA1CS100	10
C117,118	$	ECKD1H103ZF	0.01
C119	$	ECKD1H103ZF	0.01
C120	$	ECEA50ZR47	0.47
C121	$	ECCD1H101KC	100P
C122	$	ECKD1H103ZF	0.01
C201,202	$	ECQM1H473JZ	0.047
C203	$	ECCD1H120KC	12p
C204		ECQP1471JZ	470p
C205	$	ECKD1H223ZF	0.022
C206	$	ECEA1AS470	47
C207	$	ECEA1HS100	10
C208,209	$	ECKD1H223ZF	0.022
C210	$	ECEA1CS330	33
C211,212	$	ECKD1H103ZF	0.01
C214	$	ECCD1H150KC	15p
C215	$	ECKD1H102ZF	0.001
C216	$	ECKD1H103ZF	0.01
C301		ECQP1562JZ	5600p
C302	$	ECEA1CS221	220
C303	$	ECCD1H100KC	10p
C304,305	$	ECQM1H822JZ	0.0082
C306,307	$	ECEA50Z2R2	2.2
C308		ECQP1471JZ	470p
C310	$	ECQM1H223JZ	0.022
C311	$	ECCD1H470K	47p
C323	$	ECEA50Z1	1
C324	$	ECEA50Z3R3	3.3
C325	$	ECEA50ZR47	0.47
C326	$	ECEA50Z1	1
C501	$	ECEA1CS330	33
C502	$	ECKD1H391KB	390p
C503	$	ECQM1H393JZ	0.039
C504	$	ECQM1H823JZ	0.082
C505	$	ECQM1H223JZ	0.022
C506,507	$	ECEA1HS100	10
C508	$	ECEA50Z2R2	2.2
C701	$	ECKD2H681KB	680p
C702	$	ECEA1ES471	470
C703	$	ECEA1S102	1000
C704	$	ECEA1HS470	47
C705	$	ECEA1HS470	47
C706,707	$	ECKD2H681KB	680p
C708	$	ECEA1ES101	100
C709	$	ECEA50Z3R3	3.3
C710	$	ECKD1H103ZF	0.01
C711	$	ECEA1AS101	100
C712	$	ECEA1VS471	470
C714	$	ECEA1CS471	470
C715	$	ECEA1VS101	100
C902,903	$	ECKD1H103ZF	0.01
C904,905		EECW2R3A3R3E	3.3F
C906	$	ECEA0JS222	2200
C907,908	$	ECKD1H103ZF	0.01
C909	$	ECEA50M4R7R	4.7
C910	$	ECKD1H103ZF	0.01
C911	$	ECKD1H223ZF	0.022
C912	$	ECCD1H180KC	18p
C913	$	ECCD1H070CC	7p
C914	$	ECEA1AS221	220
C918	$	ECEA50Z3R3	3.3
C919	$	ECKD1H102ZF	0.001
C950	$	ECEA1ES101	100

■ EXPLODED VIEWS



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